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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,805	10/27/2003	Michiko Takushima	50212-547	9681

7590 03/09/2005

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600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER
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SONG, SARAH U

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/692,805	Applicant(s) TAKUSHIMA ET AL.	
	Examiner Sarah Song	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1003,0304</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on October 27, 2003 and March 23, 2004 have all been considered and made of record (note the attached copy of form PTO-1449).

### ***Drawings***

3. This application has been filed with six (6) sheets of drawings, which have been approved by the Examiner.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

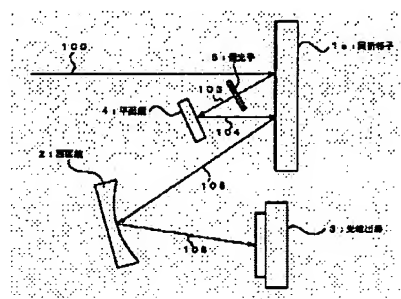
5. **Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komiyama (JP 2001-004447 cited by Applicant) in view of Marie (U.S. Patent 4,496,518).**

6. Regarding claims 1, 3, 4, 6 and 7, Komiyama discloses an optical signal processor comprising a first diffraction grating device (upper portion of 1a) for diffracting light 100 inputted; a second diffraction grating device (lower portion of 1a) for diffracting the light 104 diffracted by the first diffraction grating device; and a half-wave plate 5 disposed on an optical

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path between the first and second diffraction grating devices for effecting a rotation in polarization of 90 degrees. The half-wave plate (polarization rotator) is arranged orthogonal to an optical axis of light having a center wavelength in a wavelength band in use. A mirror 4 is disposed on the optical path between the first and second diffraction grating devices; and the polarization rotator is disposed on an optical path between the first diffraction grating device and the mirror, or on an optical path between the second diffraction grating device and the mirror. Furthermore, the first and second diffraction grating devices are integrated with each other as structure 1a, and it appears that the first and second grating devices also have the same grating direction.

7. Komiyama does not disclose a second half-wave plate also disposed on the optical path between the first and second diffraction grating devices, wherein the two half-wave plates have respective optic axes in directions different from each other by 45 degrees.



8. Marie discloses that two half-wave plates having the respective optic axes in directions different from each other by 45 degrees will effect a 90-degree rotation of polarization. See column 6, lines 26-28.

9. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the single half-wave plate to comprise first and second half-wave plates since Marie discloses that two half-wave plates, having respective optic axes in directions that are different from each other by 45 degrees, are an equivalent structure to the single half-wave plate for effecting a rotation in polarization of 90 degrees.

10. One of ordinary skill in the art would have been motivated to modify the half-wave plate of Komiyama to comprise the claimed first and second half-wave plates in order to enhance manufacturability of the device since Marie discloses that the degree of polarization rotation is dependent only on the relative orientations  $\gamma$  of the optic axes of the half-wave plates, thus simplifying the overall alignment scheme.

11. Regarding claim 2, the two diffraction grating devices of Komiyama are integrally formed. Komiyama does not expressly disclose first and second discrete diffraction grating devices that are arranged parallel to each other. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the diffraction grating device as two separate and resultantly parallel diffraction grating structures in order to provide smaller components and reduce overall mass by eliminating excess structure.

12. Regarding claim 5, Komiyama does not expressly disclose the mirror to be parallel to the first or the second diffraction grating device. However, it would have been obvious to one of ordinary skill to alter the angular orientations of the respective components to achieve the desired coupling arrangement, and it appears that the invention would perform equally well with any angular orientation of the mirror provided that the optical paths are provided to the respective components.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pan discloses two half-wave plates having the respective optic axes in directions different from each other by 45 degrees for providing a 90-degree rotation of polarization (see columns 7 and 8).


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14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Sarah Song  
Patent Examiner  
Group Art Unit 2874